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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/687,770  | 10/20/2003  | Hideki Komatsuda     | 105193.05           | 9594             |
| 25944   | 7590        | 04/07/2004           | EXAMINER            |                  |
| OLIFF & BERRIDGE, PLC<br>P.O. BOX 19928<br>ALEXANDRIA, VA 22320 |             |                      | VANORE, DAVID A     |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2881                |                  |

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                                   |  |
|------------------------------|-------------------------------|-----------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/687,770 | Applicant(s)<br>KOMATSUDA, HIDEKI |  |
|                              | Examiner<br>David A Vanore    | Art Unit<br>2881                  |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09259137.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1003</u> . | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "certain" in claims 1, 11, 13, and 15 is a relative term which renders the claim indefinite. The term "certain" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Claims 1, 11, 13, and 15 recite that a radiation source supplies EUV radiation having a "certain" dispersion angle. The recitation a "certain" dispersion angle does clearly point out what dispersion angle is required to practice the claimed invention. Since claims 2-10 and 12-18 carry the limitations of claims 1 and 11 respectively, claims 2-10 and 12-18 are rejected as being indefinite as well.

Claims 9 and 18 recite the limitation "type" in line 2. The addition of the word "type" to an otherwise definite expression (e.g., Friedel-Crafts catalyst) extends the scope of the expression so as to render it indefinite. *Ex parte Copenhaver*, 109 USPQ 118 (Bd. App. 1955).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-12 and 15-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Murayama et al.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Murayama et al. teaches an EUV optical apparatus comprising the following:

1. An optical apparatus and associated method comprising a radiation source which supplies EUV radiation having a certain dispersion angle (100 and Col. 4) as recited in claims 1 and 11.
2. An optical apparatus and associated method comprising an illumination optical system having a reflective integrator (6 and Col. 5 Lines 6-16) which forms a secondary

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radiation source having a predetermined shape based on the EUV radiation supplied from the radiation source (Col. 5 Lines 29-32) as recited in claims 1 and 11.

3. An optical apparatus and associated method comprising a projection optical system (9) which is arranged in an optical path between a reflective mask (8) and the predetermined surface (10) and which forms an image of the reflective mask onto the predetermined surface based on the EUV radiation from the reflective mask (Col. 5 Lines 47-55) as recited in claims 1 and 11.

4. An optical apparatus and associated method wherein the secondary radiation source having the predetermined shape has a shape which is selected from the group consisting of a substantially circular shape, an annular shape, and a multipolar shape (Col. 13 Line 58-Col. 14 Line 13) as recited in claims 1 and 11.

5. An optical apparatus and associated method wherein a numerical aperture (of the projection optical system is changeable (Col. 14 Lines 30-40 especially) as recited in claim 2.

6. An optical apparatus and associated method wherein a numerical aperture of the illumination optical system is changeable (Col. 14 Lines 30-40 especially) as recited in claim 3.

7. An optical apparatus and associated method further comprising an annular and multipolar radiation beam converting unit (Items AS1 and AS2 Col. 13 Line 55-Col. 14 Line 50) which is arranged in an optical path between the radiation source and the reflective integrator (Note Fig. 7 Item AS1) as recited in claims 4 and 5.

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8. An optical apparatus and associated method wherein the multipolar shape comprises a quadrupolar shape (Col. 13 Line 58- Col. 14 Line 13) as recited in claim 6.

9. An optical apparatus and associated method further comprising a unit (Items 4 and 5 in Fig. 7) that changes a radiation beam which is incident on the reflective integrator as recited in claim 7.

10. An optical apparatus and associated method wherein the projection optical system comprises six mirrors (Items 91-97 in Fig. 7) as recited in claim 8.

11. An optical apparatus and associated method wherein the illumination optical system and the projection optical system are mask side non-telecentric (Col. 5 Line 41-47) as recited in claim 10.

12. An optical apparatus and associated method of guiding EUV radiation further comprising the step of changing a coherence factor (Col. 7 Lines 65-68) as recited in claim 12.

13. An optical apparatus and associated method further comprising the step of converting the EUV radiation having the certain dispersion angle to a multipolar beam and wherein the converting step is performed before guiding the EUV radiation to the reflective integrator (Col. 13-14 and Item AS1) as recited in claims 15-16.

14. An optical apparatus and associated method wherein the multipolar shape comprises a quadrupolar shape (Col. 14) as recited in claim 17.

15. An optical apparatus and associated method wherein the selecting step changes the shape of the secondary radiation source based on information about a type of the reflective mask (Col 14 Line 32-39) as recited in claim 18.

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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A Vanore whose telephone number is (571) 272-2483. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dav

  
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